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A METHOD OF PRODUCING STROMATA IN CLAVICEPS*

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Although numerous methods have been developed in attempts to produce the perfect stage from *Claviceps* sclerotia, they are often time consuming and of uncertain results. The technique reported here outlines an easy method of producing perithecial heads indoors with a minimum of attention.

Many investigators have considered a period of freezing essential to perithecial formation. Whetzel and Reddick (6) report leaving the sclerotia outside until spring, then bringing them into the laboratory and placing them in moist sand in a covered chamber until head formation occurred. According to Kirchoff (5), actual frost is not essential. He experimented with varying lengths of exposure of the sclerotia to cold, and found that after three to six weeks exposure to 2° to 3° C., then a period of from four to eight weeks at 15° C. good head formation occurred. Moderately moist sand was the substrate used in his studies. Hansen and Valleau (4), used water agar as a substrate and exposed the sclerotia to continuous temperature of 3° C. and winter outdoor temperatures. They report serious trouble with contaminants on such a substrate.

In the present studies, *Claviceps* sclerotia collected from brome were surface sterilized for five minutes in a ten per cent solution of hypochlorite. They were then placed aseptically on sterile 1 per cent water agar slants which were tightly plugged with cotton. Use of such media provided stable moisture condtions without further attention. The tubes were kept in three chambers in which temperatures of 5°, 10°, and 15° C. respectively were maintained. The sclerotia were tubed on August 25, 1945, and on February 8, 1946, heads bearing mature perithecia were observed in one of the tubes in the 10° chamber. At this time, heads were beginning to form in one of the tubes held at 5°, but none were apparent in those in the 15° chamber. As constant temperatures were maintained, it is evident that periods at varying temperatures are not necessary for head and perithecial production. No trouble was experienced with contaminating organisms, or with excessive mycelial growth from the sclerotia.

Free hand sections were cut from one of the heads bearing mature perithecia and asci and ascospore measurements determined. The ascospores averaged 88.4 microns in length by 1.3 microns in width. Saccardo lists ascospores of *Claviceps purpurea* as ranging from 50 to 76 microns in length. Average ascus measurement was 129.5x4.23 microns, while the perithecia were approximately 136.5x243.5 microns.

The ascospores were three septate, one in the center of the spore

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with another septum on either side at equal distances from the center. Thus the end cells of the spores were longer than the two central cells. This observation agrees with Gussou (3), in his report on the tri-septate condition of ascospores from barley ergot. Freeman (2), reports ascospores from *Claviceps* sclerotia of grasses as being divided by cross walls into about sixty-four cells, while Tulasne regards them as one continuous cell.

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